REMARKS

The examiner objected to the drawings because in figure 2A, reference number "42" was missing from the fuel delivery port and in figure 8, reference number "12" for the powered device should be changed to "10".

Corrected drawing sheets are enclosed herein in reply to the Office action.

The examiner objected to disclosure because of certain informalities. Applicant has corrected reference designations on page 7 lines 4, 7, 9, 10, changing "48a" to "48b" and "46b" "48a", as appropriate.

In page 10, applicant has deleted reference designations "70" and "33," as redundant.

In page 12, lines 15, 19, 21, 23, the reference number "114" for the external chamber was changed to "112."

On page 13, lines 29-30, the thermally insulating walls "12b" were changed to "12a."

The examiner objected to Claim 8, as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant has amended claim 8, to depend from claim 7 instead of claim 1.

The examiner rejected Claims 7, 8, and 11 under 35 U.S.C. 112, second paragraph, as being indefinite. The examiner considered the term "liquid source of hydrogen" as vague and unclear with respect to direct methanol fuel cells. The examiner stated that: "Typically, hydrogen is not involved in direct methanol fuel cells since liquid methanol is supplied directly to the anode of the fuel cell." Applicant contends that these claims were proper since one of ordinary skill would understand that a liquid source of hydrogen would include a liquid that can provide hydrogen as part of the fuel in the fuel cell. Thus, examples of a liquid source of hydrogen would include methanol for instance.

Nonetheless to advance prosecution, applicant has amended these claims. As amended, claim 7 now calls for a liquid source of fuel, claim 8, now depends from claim 1 and calls for methanol and claim, 11 calls for a liquid source of an "oxidizable fuel." Support is found in claim 17 as originally filed, as well as numerous other instances, such as page 8, line 11. No new matter has been entered. Applicant has made other clarifying amendments to the claims.

The examiner rejected Claims 1-17 under 35 U.S.C. 103(a) as being unpatentable over Hockaday et al (US 2001/0049045) in view of Bourilkov et al (US 2004/0253500). The examiner stated:

> **The Hockaday reference teaches a container or fuel cartridge that supplies a source of fuel to a direct methanol fuel cell comprising a housing "1" having a portion of the wall being comprised of a thermally conductive material that is steel or aluminum and a thermally insulating material that is polychlorotrifluoroethylene, a surface area enhanced planar vaporization membrane "8" that is a polymer membrane made of silicon rubber, a liquid source of oxidizable fuel that is methanol "10" (See Figure 2 and column 5 lines 64 to column 6 lines 39). In addition, it teaches increasing the rate of fuel permeating through the membrane by increasing the temperature (See column 3 lines 54-57). However, the reference does not expressly teach a fuel egress port or a method of disposing a fuel cartridge into a compartment of an electronic device such that the thermally conductive material is placed in thermal communication with a heat generating component in the electronic device to enable vapor phase of the fuel in the housing to egress from the cartridge. The Bourilkov reference does teach a fuel cartridge that comprises an egress port "42" that is connected to a compartment of an electronic device "12" (See Figure 1 and 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Hockaday fuel cartridge to include a egress port that connects to an electronic device where a heat generating component increases the rate of fuel delivery in order to match the consumption rate of the fuel cell in the electronic device.**

Applicant's claims are allowable over Hockaday et al (US 2001/0049045) in view of Bourilkov et al (US 2004/0253500).

Claim 1 for instance recites a container that supplies a source of fuel to a direct methanol fuel cell. Claim 1 includes the limitation of a housing... having at least a portion of a wall of the housing being comprised of a thermally conductive material a fuel egress port supported by the housing and a surface area enhanced planar vaporization membrane residing in the container. Neither Hockaday nor Bourilkov is seen as disclosing these features.

Neither the construction nor the materials disclosed by Hockaday suggest a housing... having at least a portion of a wall of the housing being comprised of a thermally conductive material and a surface area enhanced planar vaporization membrane residing in the container and in thermal communication with the at least portion of the wall comprised of a thermally conductive material.

The examiner contends that Hockaday teaches a housing "1" having a portion of the wall being comprised of a thermally conductive material that is steel or aluminum and a thermally insulating material that is polychlorotrifluoroethylene,"

Hockaday discloses:

> **The ampoule 2 is shown contained within the outer gas impermeable container 1. This container may include two components; a structural material 6 and a sealing material 7. The structural material 6 may be a plastic material that is easily heat sealed such as polyester or polyethylene plastic to form a bag around the ampoule 2. The inner surface of the structural material 6 may have a methanol impermeable coating 7 on it such as, but not limited to, polychlorotrifluorethylene to block methanol and diffusion. The outer container 1 may be a steel or an aluminum can. A support material 12 may be inserted between the walls of the outer can or container 1 and the ampoule 2 to provide padding.**

Claim 1 however, requires a housing... having at least a portion of a wall of the housing being comprised of a thermally conductive material and a surface area enhanced planar vaporization membrane residing in the container.

Hockaday discloses the fuel ampoule 2 contained within container 1. However, container 1 is intended for packaging, since as fully disclosed by Hockaday, in use the ampoule 2 is inserted into the fuel cells as disclosed in FIG. 3. Moreover, Hockaday fails to disclose a fuel egress port. Thus, the container 1 may include a structural material 6, e.g., plastic, which as disclosed by Hockaday is non-thermally conducting. Hockaday also discloses that "the outer container 1 may be a steel or an aluminum can" is simply provided as packaging and is not as the container that supplies fuel to the direct methanol fuel cell.

Claim 1 further distinguishes since claim 1 also requires a surface area enhanced planar vaporization membrane residing in the container. Neither Hockaday nor Bourilkov disclose this feature.

The examiner acknowledges that Hockaday "does not expressly teach a fuel egress port." The examiner relies on "Bourilkov to teach a fuel cartridge that comprises an egress port '42' that is connected to a compartment of an electronic device "12" (See Figure 1 and 3).", arguing that it would have been obvious "to modify the Hockaday fuel cartridge to include a egress port

that connects to an electronic device where a heat generating component increases the rate of fuel delivery in order to match the consumption rate of the fuel cell in the electronic device."

Applicant contends that this is incorrect. Modification of Hockaday by Bourilkov would not be suggested, since Hockaday uses the silicone rubber membrane to distribute methanol to the fuel cells by inserting the ampoule 2 into the cells. By including a fuel egress port, as taught by Bourilkov, on the ampoule 2 of Hockaday would destroy the intent, purpose and principal of operation of Hockaday.

Indeed, Hockaday teaches selective permeability temperature response [0026]. However, Hockaday implies that this property of "increasing permeability with temperature is used to match the fuel cell consumption rate as the temperature increases." Hockaday describes this as a characteristic of the fuel ampoule. Hockaday does not suggest using heat from the powered device to increase fuel vaporization rate. Indeed, Hockaday also mentions that: "The permeability rate may also be chosen to not rise as much as the fuel cell consumption rate to keep the fuel cell at higher temperatures using more fuel than necessary. This may be the case in power applications where the power delivery is constant regardless of the temperature environment." Thus, one reading Hockaday can conclude that Hockaday does not suggest the desirability of using heat from the powered device, but instead sees that as a problem. Keeping in mind that the ampoule 2 is inserted into the fuel cells (FIG. 3) it is apparent that Hockaday does not propose any structural feature to make use of heat from powered devices. Therefore, one of ordinary skill would read Hockaday as failing to appreciate the advantage of using heat generated from the powered device to increase the rate of fuel delivery.

Claim 2, which recites that "the surface area enhanced planar vaporization membrane is a polymer membrane" and 3, which recites that "the at least a portion of a wall of the housing being comprised of a thermally conductive material is comprised of a metal" serve to further distinguish over the combination of references.

Claim 4, which recites that the "remaining portions of walls of the container are thermally insulating." is not disclosed by the references. Hockaday does not teach a structure in

which some walls of the container are thermally insulating whereas other(s) are thermally conductive.

Claim 5, which recites that at least a portion of a wall of the housing being comprised of a thermally conductive material is a portion of the housing of the container disposed adjacent the fuel egress port of the container, is not disclosed by Hockaday taken separately or in combination with Bourilkov. Although Bourilkov discloses a fuel egress port there is no suggestion to place the thermally conductive material adjacent the fuel egress port. Neither reference suggests the desirability of using the dissipated thermal energy from an operating device to increase vapor pressure.

Claims 6-9 serve to further distinguish over the references.

Claim 10 serves to further distinguish since neither Hockaday nor Bourilkov suggests the desirability of a fuel cartridge, in which at least a portion of a wall of the housing is comprised of a thermally conductive material, enhances a delivery rate of methanol in a vapor phase across the membrane to deliver vapor at the egress port of the container.

Claim 11, as amended, is distinct over the combination of references, since the references neither describe nor suggest a fuel cartridge ... comprising a housing ... containing and in direct contact with a liquid source of an oxidizable fuel and having at least a portion of a wall of the housing being comprised of a thermally conductive material and a fuel egress port supported by the housing.

The examiner acknowledges that Hockaday "does not expressly teach a fuel egress port." The examiner relies on "Bourilkov to teach a fuel cartridge that comprises an egress port '42' ... ", arguing that it would have been obvious "to modify the Hockaday fuel cartridge to include a egress port that connects to an electronic device where a heat generating component increases the rate of fuel delivery in order to match the consumption rate of the fuel cell in the electronic device."

Applicant contends that this is incorrect, since neither reference teaches the advantage of using heat generated from the powered device to increase the rate of fuel delivery. Moreover, modification of Hockaday by Bourilkov would not be suggested, since Hockaday uses the

silicone rubber membrane to distribute methanol to the fuel cells by inserting the ampoule 2 into the cells. By including a fuel egress port as taught by Bourilkov would destroy the intent, purpose and principal of operation of Hockaday.

Claim 13 distinguishes since no combination of the references suggests that remaining portions of walls of the cartridge are thermally insulating or as in claim 14 where the at least a portion of a wall of the housing being comprised of a thermally conductive material is a portion of the housing of the container disposed adjacent the fuel egress port of the cartridge.

Claim 16 distinguishes since no combination of the references suggests a method including disposing a fuel cartridge into a compartment of an electronic device such that a portion of a wall of a housing of the fuel cartridge that is comprised of a thermally conductive material is placed in thermal communication with a heat generating component in the electronic device to enable a vapor phase of the fuel in the housing to egress from the cartridge.

The examiner acknowledges that Hockaday fails to disclose: "a method of disposing a fuel cartridge into a compartment of an electronic device such that the thermally conductive material is placed in thermal communication with a heat generating component in the electronic device to enable vapor phase of the fuel in the housing to egress from the cartridge." The examiner relies on "Bourilkov to teach this feature arguing that it would have been obvious "to modify the Hockaday fuel cartridge to include "a egress port that connects to an electronic device where a heat generating component increases the rate of fuel delivery in order to match the consumption rate of the fuel cell in the electronic device."

Applicant contends that this is incorrect, since neither reference teaches the advantage of using heat generated from the powered device to increase the rate of fuel delivery. Moreover, modification of Hockaday by Bourilkov is not suggested, since Hockaday uses the silicone rubber membrane to distribute methanol to the fuel cells by inserting the ampoule 2 into the cells. By including a fuel egress port as taught by Bourilkov would destroy the intent, purpose and principal of operation of Hockaday.

Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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Amendments to the Drawings:

The attached replacement sheets (2) of drawings includes changes to Figs. 2A and 8 and replaces the original sheet including Figs. 2A and 8.

In Figure 2A, reference number 42 was added.

In Figure 8, reference number 12 was changed to 10.

The examiner objected to the drawings because in figure 2A, reference number "42" was missing from the fuel delivery port and in figure 8, reference number "12" for the powered device should be changed to "10".

Attachments following last page of this Amendment:

Replacement Sheet (2 pages)
Annotated Sheet Showing Change(s) (2 pages)

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FIG. 2A

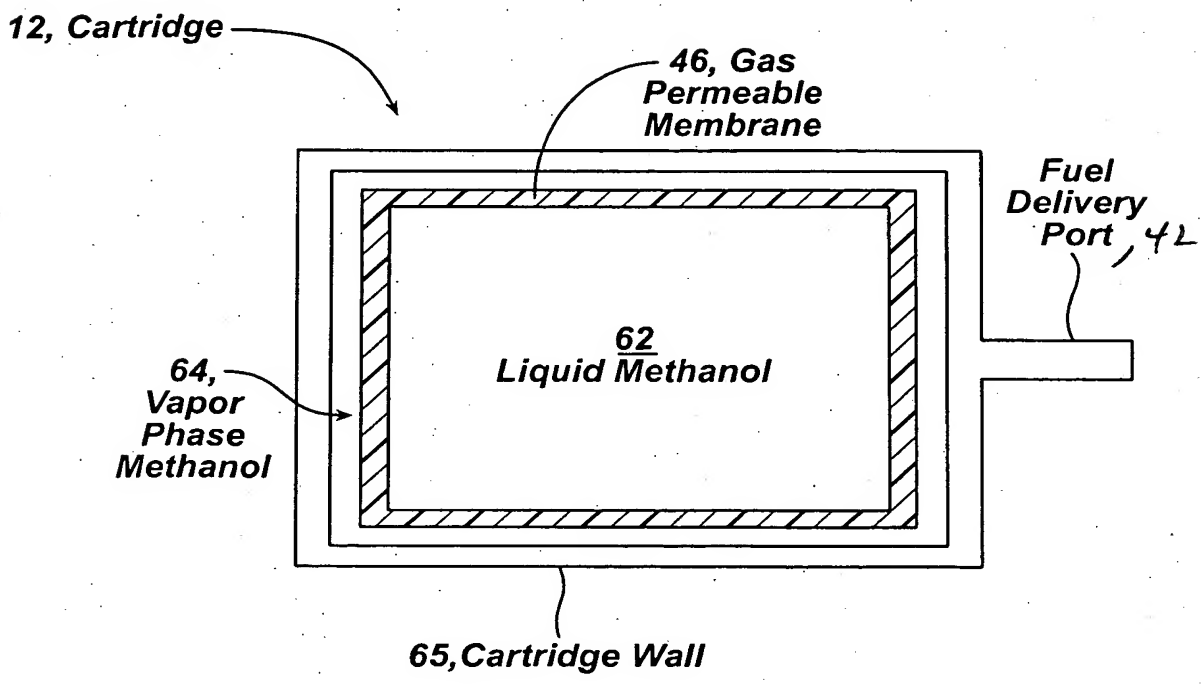
12, Cartridge
46, Gas Permeable Membrane
Fuel Delivery Port, 42
62
Liquid Methanol
64, Vapor Phase Methanol
65, Cartridge Wall

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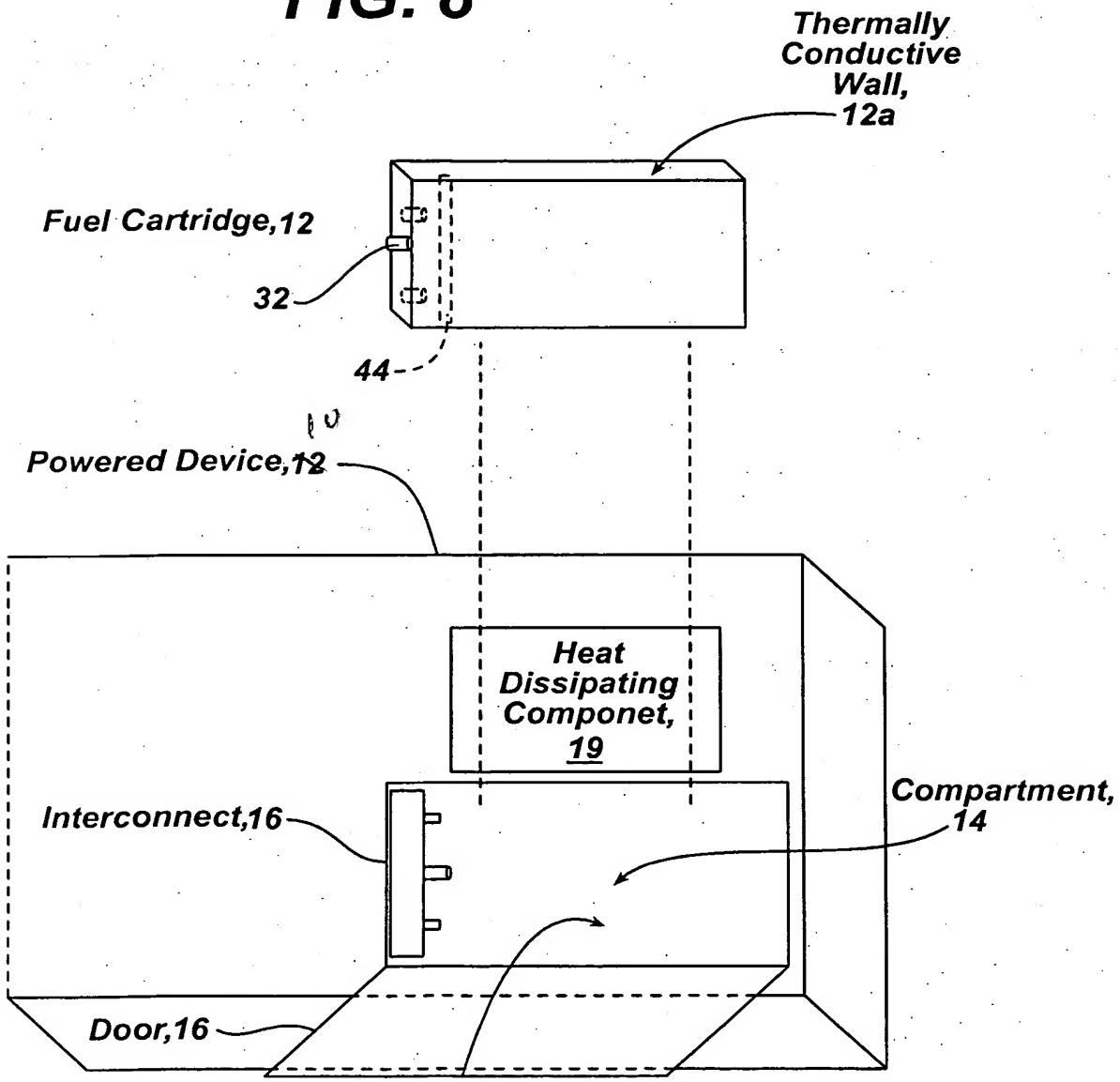
FIG. 8


Thermally Conductive Wall, 12a
Fuel Cartridge, 12
32
44
10
Powered Device, 12
Heat Dissipating Componet, 19
Compartment, 14
Interconnect, 16
Door, 16